



# UNITED STATES PATENT AND TRADEMARK OFFICE

m-1

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/509,017

09/27/2004

Yasushi Maruta

01070074Aa

1245

30743

7590

11/16/2006

WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.  
11491 SUNSET HILLS ROAD  
SUITE 340  
RESTON, VA 20190

EXAMINER

KARIKARI, KWASI

ART UNIT

PAPER NUMBER

2617

DATE MAILED: 11/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/509,017	MARUTA, YASUSHI	
	Examiner	Art Unit	
	Kwasi Karikari	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-4, 12-16 and 24-28 is/are rejected.
- 7) ☒ Claim(s) 5-11 and 17-23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2617.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Objections***

3. Claims 1,13-15,18-23,27 and 28 are objected to because of the following informalities:

Applicant uses "characterized by having " in claim 1; "characterized by comprising" in claims 27 and 28; and "characterized" in claims 13-15 and 18-23. Examiner suggests using "consisting: or comprising:" in the objected claims. Appropriate corrections are required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

In claims 1, 27 and 28, the applicant recites the limitations "the path delay/reception beam number", however, there are insufficient prior antecedent basis for these

Art Unit: 2617

limitations in the claims. For examination purposes the examiner will treat the examiner will treat the claimed limitations "the path delay/reception beam number" as understood in the specification. All claims that depend on the above rejected claims are also rejected for fully incorporating the deficiencies of the above rejected claims from which they depend. Appropriate corrections are required.

### **Claim Rejections - 35 USC § 103**

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-4,12-16 and 24-28 rejected under U.S.C. 103(a) as being unpatentable over Matsuoka et al., (U.S. 20010049295 A1), (hereinafter Matsuoka) in view of Yukitomo et al., (U.S 6,240,149), (hereinafter Yukitomo).**

Regarding **claims 1,13, 27 and 28** Matsuoka discloses a multi-beam antenna transmitter/receiver/method/ (pluralities of antennas 10-1 to 10-N, 20-1 to 20-N for transmission/reception, (see Pars. [0053 and 0075]; Figs. 1 and 4) characterized by having:

a plurality of reception beams and a plurality of transmission beams (pluralities of antennas 10-1 to 10-N, 20-1 to 20-N for transmission/reception, see Pars. [0053 and 0075]; Figs. 1 and 4), and

selecting the transmission beam on the basis of overall reception qualities calculated from reception qualities of path delays of user signals present in the plurality of reception beams (transmission is selected on the basis of the estimated arrival angle range that is associated with the average received power of desired wave, see Pars. [0065-66]; and delay profiles estimates associated with received signal, see also Pars. [0056-6, 0075 and 0148-154]); but fails to teach user demodulation means for receiving an output from reception beam formation means, said user demodulation means including; reception beam path detection means for detecting a path delay for each user from an output from reception beam formation means and outputting the path delay/reception beam number; reception beam calculation means for calculating an overall reception quality of a user signal for each reception beam from the reception quality of the user signal corresponding to a path delay/reception beam number as an output from the reception beam path detection means; transmission beam selection means; and reception beam calculation means.

However, Yukitomo teaches user demodulation means for receiving an output from reception beam formation means, said user demodulation (see col.6, lines 10-50) means including; reception beam path detection means for detecting a path delay for each user from an output from reception beam formation means and outputting the path delay/reception beam number (see col. 7, lines 8-60); reception beam calculation means for calculating an overall reception quality of a user signal for each reception beam from the reception quality of the user signal corresponding to a path delay/reception beam number as an output from the reception beam path detection

Art Unit: 2617

means; transmission beam selection means; and reception beam calculation means (see col. 3, lines 30-57).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Yukitomo with the system of Matsuoka for the benefit of achieving a system whereby a transmission radiation pattern controller can form reception radiation pattern that can reduce interference and reduce power consumption (see Yukitomo, col. 9, lines 39-46).

Regarding **claims 2 and 14**, as recited in claims 1 and 13, Matsuoka further discloses the multi-beam antenna transmitter/receiver/method, wherein said reception beam path detection means selects the reception beam is selected on the basis of the overall reception quality (see Par. [0027], and said transmission beam selection means selects the transmission beam having a direction which coincides with or is close to a direction of the selected reception beam is selected (see Par. [0029]).

Regarding **claims 3 and 15**, as recited in claims 1 and 13, Matsuoka fails to discloses the multi-beam antenna transmitter/receiver/method, wherein said reception beam calculation means uses reception power or an SIR (Signal to Interference Ratio) is used as an index of the reception quality.

However, Yukitomo teaches the multi-beam antenna transmitter/receiver/method, wherein said reception beam calculation means uses reception power or an SIR (Signal to Interference Ratio) is used as an index of the reception quality (see col. 4, lines 1-57).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Yukitomo with the system of Matsuoka for the benefit of achieving a system whereby a transmission radiation pattern controller can form reception radiation pattern that can reduce interference and reduce power consumption (see Yukitomo, col. 9, lines 39-46).

Regarding **claims 4 and 16**, as recited in claims 1 and 13, Matsuoka further discloses the multi-beam antenna transmitter/receiver/method, comprising:

a reception array antenna in which a reception antenna element is arranged (antennas 10-1 to 10-N and 20-1 to 20-N);

radio reception means for receiving an output from the reception antenna element, performing a reception process for an input signal, and outputting the signal (reception antenna 13, see Pars. [0055-61]);

reception beam formation means for receiving an output from said radio reception means and forming a reception beam (reception beam selector 22, see Par. [0076]);

user modulation means for receiving user transmission data, performing a modulation process, and outputting a modulated user signal (see Par. [0057]);

user transmission beam switching means for receiving the user transmission beam number (inherent) and the modulated user signal, and outputting the modulated user signal so as to form a transmission beam corresponding to the user transmission beam number (see Par. [0076]);

transmission beam formation means for receiving an output from said user transmission beam switching means, and forming the transmission beam (beam forming section 22, see Pars. [0066 and 0076]);

radio transmission means for receiving an output from said transmission beam formation means, performing a transmission process for an input signal, and outputting the signal (transmission beam selector 24, see Par. [0076 and 0081]); and

a transmission array antenna in which a transmission antenna element for transmitting an output from said radio transmission means is arranged (transmission beam selector 24, see Par. [0076, 0081] and Figs. 2-4).

Regarding **claims 12 and 24**, as recited in claims 1 and 13, Matsuoka further discloses the multi-beam antenna transmitter/receiver/method, comprising:

means for forming the plurality of reception beams means for forming the plurality of transmission beams ( pluralities of antennas 10-1 to 10-N, 20-1 to 20-N for transmission/reception, (see Pars. [0053 and 0075]; Figs. 1 and 4);

means for calculating the overall reception qualities for the respective reception beams by adding values of the reception qualities for the path delays of the user signals (transmission is selected on the basis of the estimated arrival angle range that is associated with the average received power of desired wave, see Pars. [0065-66]; and delay profiles estimates associated with received signal, see also Pars. [0056-61 and 0148-154]); and



means for selecting a reception beam excellent in overall reception quality and selecting a transmission beam having a direction which coincides with or is close to a direction of the selected reception beam (see Pars. [0027 and 0029]).

Regarding **claim 25**, Matsuoka discloses a transmission beam selection method wherein: selecting a transmission beam on the basis of overall reception qualities calculated from reception qualities of path delays of user signals present in reception beams (transmission is selected on the basis of the estimated arrival angle range that is associated with the average received power of desired wave, see Pars. [0065-66]; and delay profiles estimates associated with received signal, see also Pars. [0056-61, 0075 and 0148-154]).

Regarding **claim 26**, as recited in claim 25, Matsuoka discloses the transmission beam selection method, characterized in that the reception beam is selected on the basis of the overall reception quality, and the transmission beam having a direction which coincides with or is close to a direction of the selected reception beam is selected (see Pars. [0027 and 0029]).

6. ***Allowable Subject Matter***

Claims 5-11 and 17-23 and are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

**Obayashi (U.S. 7,062,273)** teaches a mobile communication terminal apparatus having array antenna for communication to at least one base station.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

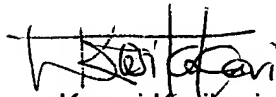
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwasi Karikari whose telephone number is 571-272-8566. The examiner can normally be reached on M-F (8 am - 4pm).

Art Unit: 2617

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8566.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Kwasi Karikari  
Patent Examiner.

  
JOSEPH FEILD  
SUPERVISORY PATENT EXAMINER